

Work Order ID 84764

84764

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July-06-12 10:26:56 AM

Item ID: D206-667-207BL Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Crosstube Mid Aft
 Start Date: 5/23/12 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 6/08/12 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: W Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-247	A (DEO)								
IIN-D206-667	D								
100	DOCUMENT CONTROL	0.00							
100									
DC	Memo	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D206-667-207 chg 002								
110	BENDING MACHINE - CROSSTUBES	0.00							
110									
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D206-667-247 using CNC bender program D206-667-207								

MCS 12/07/12

MO/RM 12-7-12





Pro

12/07/12

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: AWH Date: 12/07/27QA Closed: CF Date: 12/7/27

Work Order: <u>24764</u> Part No. <u>D 206-667203</u> NCR No. <u>12-1624</u> BCL				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input checked="" type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>						Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>																								
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>																								
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>																								
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																									
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector																		
Doc/Data <input type="checkbox"/> Equip/Tooling <input type="checkbox"/> Operator <input type="checkbox"/> Material <input type="checkbox"/> Setup <input type="checkbox"/> Other <input type="checkbox"/> Process <input checked="" type="checkbox"/> Supplier <input type="checkbox"/> Training <input type="checkbox"/> Unapproved <input type="checkbox"/>	12/7/19	11D	1	CRUSHING IS OVER TOLERANCE AFTER BENDING, One height after bending is over tolerance	 12/7/19	Acceptable per attached SR.	 n/a	 12/6/25	 12/6/25																		
FAULT CATEGORY																											
Landing Gear		General		Grain		Other		Pressure/Forced																			
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain	<input checked="" type="checkbox"/> Ovalized	<input type="checkbox"/> Pressure/Forced	<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input checked="" type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Temperature/Cure	<input type="checkbox"/> Weld																		
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Hardware	<input type="checkbox"/> Part Incorrect	<input type="checkbox"/> Wrong Stock Pulled	<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Part Lost/Missing	<input type="checkbox"/> Positioned Wrong	<input type="checkbox"/> Other																		
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Moved		<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Power Loss/Surge																				
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Maintenance			<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes																					
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Misread			<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish																					
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Offset			<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio																					
		<input type="checkbox"/> Out of Calibration																									
		<input type="checkbox"/> Out of Sequence																									
		<input type="checkbox"/> Outside Dimensions																									



Work Order ID 84764***84764***

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Item ID: D206-667-207BL

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Mid Aft

Start Date: 5/23/12 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 6/08/12 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

QC15- Crosstube Dimensional Check

0.00

0.00

120

QC

Memo

Quality Control

Work Order ID 84764

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Item ID: D206-667-207BL Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
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Required Date: 6/08/12 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start ***NR1***
QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Crosstubes	0.00							
130									
Crosstubes									
Crosstubes									
	Memo	0.00							
	1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 and drill table DT8577 and tower holes #6 as per QSI0010 and as per Dwg D206-667-247. Drill all (3) top holes.								
	2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247 Check dimensions between holes on all four sides.								
	3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.								
	4-Drill pilot holes using drill Jig DT 8584 & DT8583 as per Dwg D206-667-247. Drill only the top (2) holes.								
	5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247								
	6-Drill Fwd rivet holes using drill Jig DT8787 as per Dwg D206-667-147. Note: Fwd side has 3x top holes.								
	7-Drill Aft rivet holes using drill Jig DT 8787 as per Dwg D206-667-247.								
	8-C'sink holes as per Dwg D206-667-247.								
	9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-247 Inside of Cuff(Donot engrave on outside of tube)								

10 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

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Approvals: Process Plan: Date: Tooling: Date: Run Start *NR1*
 QC: Date: SPC (Y/N): Date: Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-247								

140

140

QC

Quality Control

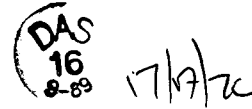
QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***



POSITIVE RECALL

EFFECTIVE 12/7/12 AUTH 9P

RELEASED 01 DATE 12/1/20

FUR BEND DIM 5

150

150

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1- CLEAN CROSSTUBE WITH WASH'N WIPE

AB 12-7-20

SHIP 25/07

Work Order ID 84764

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
195		0.00							
195									
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION								
197	QC7-Inspect Chemical Conversion Coat	0.00							
197									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								

AR

12-7-20

1

12-07-21

Work Order ID 84764

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July-06-12 10:26:56 AM

Item ID: D206-667-207BL Accept ***N900040100*** Setup Start ***NS1***
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 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200 *200* SprayPaint Spray Painting	SprayPaint Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time: <u>9:30</u> Finish Time: <u>10:30</u> PAINT: Start Time: <u>3:30</u> Finish Time: <u>4:30</u>	0.00 0.00				<u>1</u>			<u>12.57.21</u>
210 *210* QC Quality Control	QC14- Inspect Spray Paint Memo Wrap in plastic bag to protect from scratches	0.00 0.00							<u>DAS 16 9-83</u> <u>12/12/12</u>

Work Order ID 84764

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 Required Date: 6/08/12 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220		0.00							
220	Crosstubes					1			12-07-23
Crosstubes	Memo	0.00							
Crosstubes	1-Install nut plates as per Dwg D206-667-247.								
230		0.00							
230	Skidtubes					1			12-07-22
Crosstubes	Memo	0.00							
Crosstubes	1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe								
	2-Install supports with Proseal 890 per DSI9565 and QSI 015								
	A/R Proseal 890 Batch: 122441								
	3- Torque bolts as per dwg								
240	QC5- Inspect part completeness to step on W/O	0.00							
240									
QC	Memo	0.00							
Quality Control									

(DAS)
16
2-83 12/04/24

Work Order ID 84764

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Item ID: D206-667-207BL Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
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 Start Date: 5/23/12 Start Qty: 1.00 ***1*** Cust Item ID:
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 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Pick Kit	0.00							
250									
Packaging	Memo	0.00				1.0			SD
Packaging									12-7-24
260	QC4- 100% Inspect kits for completeness	0.00							
260									
QC	Memo	0.00							
Quality Control									
270		0.00							
270									
Packaging	Packaging	0.00							
Packaging	Memo								
	Identify and pack for shipping as per PPP D206-667-207								
	Location: _____								
	PPP Rev: _____								

SHIP

Work Order ID 84764***84764***

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Item ID: D206-667-207BL Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Crosstube Mid Aft
Start Date: 5/23/12 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 6/08/12 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							
Quality Control									

MLJ 12/07/12
MK
12-07-25

Picklist Print

May-23-12 7:24:31 AM

Page 1

Work Order ID: 84764

Parent Item: D206-667-207BL

Parent Item Name: Crosstube Mid Aft

Start Date: 5/23/12

Required Date: 6/08/12

Start Qty: 1.00

Required Qty: 1.00

Comments: RevA 11.01.13 New Issue EC verified by:DD
615 DD VERF:EC

IPP REV:B 11.08.08 PER ECN 11-

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

ANS-10A Bolt		Purchased	No			250	Each	216.0000	10	10			
-----------------	--	-----------	----	--	--	-----	------	----------	----	----	--	--	--

Location	Loc Qty	Loc Code
----------	---------	----------

ST337	216	
118191	80	
121181	36	
121243	100	

ANS-32A Bolt		Purchased	No			250	Each	268.0000	4	4			
-----------------	--	-----------	----	--	--	-----	------	----------	---	---	--	--	--

Location	Loc Qty	Loc Code
----------	---------	----------

ST339	168	
119328	3	
119862	50	
120423	75	
120910	30	
121415	10	
ST340	100	
121541	100	

ANS-34A Bolt		Purchased	No			250	Each	64.0000	4	4			
-----------------	--	-----------	----	--	--	-----	------	---------	---	---	--	--	--

Location	Loc Qty	Loc Code
----------	---------	----------

339	25	
121181	25	
ST339	39	
120422	39	

AN960JD516 Washer	NAS1149D0563J	Purchased	No			250	Each	0.0000	18	18			
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SP 12-7-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

May-23-12 7:24:31 AM

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Work Order ID: 84764

Parent Item: D206-667-207BL

Parent Item Name: Crosstube Mid Aft

Start Date: 5/23/12

Required Date: 6/08/12

Start Qty: 1.00

Required Qty: 1.00

D206-667-247TRN
Crosstube Assembly, Mid Aft

Manufactured No

110 Each 3.0000 1 1

Location Loc Qty Loc Code

LG 3
78498 1
83300 1
83301 1

1 MO 12-7-11

D2873-043
Nut Plate Assembly

Manufactured No

220 Each 44.0000 2 2

Location Loc Qty Loc Code

LG052 44
72644 2
81502 2
82949 40

12-07-23

D2873-045
Nut Plate Assembly

Manufactured No

220 Each 37.0000 2 2

Location Loc Qty Loc Code

LG052 37
81425 2
82947 35

12-07-23

D2892-1
Support

Manufactured No

230 Each 31.0000 2 2

Location Loc Qty Loc Code

LG 12
79222 12
82110 5
LG052 19
79888 14

12-07-23

May-23-12 7:24:32 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 84764

Parent Item: D206-667-207BL

Parent Item Name: Crosstube Mid Aft

Start Date: 5/23/12

Required Date: 6/08/12

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

230

Each

85.8095

4

4

12-07-23

RUBBER CUSHION

Location

Loc Qty

Loc Code

LG

68

82511

68

LG051

7.7

80161

7.7

MAT052

10.109474

67353

2

68893

6

70113

0.56

71354

0.2

74113

0.349474

75597

1

MS20601-AD4W10

Purchased

No

220

Each

218.0000

14

14

12-07-23

RIVET

Location

Loc Qty

Loc Code

LG050

217

120676

17

121690

100

125125

100

LG051

1

118675

1

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Shop Packet Print

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 84764

Parent Item: D206-667-207BL

Start Date: 5/23/12

Required Date: 6/08/12

Parent Item Name: Crosstube Mid Aft

Start Qty: 1.00

Required Qty: 1.00

MS210421.5

Nut Purchased No 250 Each 1,521.0000

4

8/12-7-24

Location	Loc Qty	Loc Code
300	500	
121652	500	
ST300	1021	
108827	8	
116105	5	
116548	43	
117611	18	
119109	939	
17651	8	

4x

MS21920-22

Clamp(per MIL-DTL-8783C)

Purchased No 230 Each 56.0000

4 4

12-07-23

Location	Loc Qty	Loc Code
LG	1	
119545	1	
LG050	55	
116207	7	
117506	1	
118186	8	
120631	39	

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Shop Packet Print

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

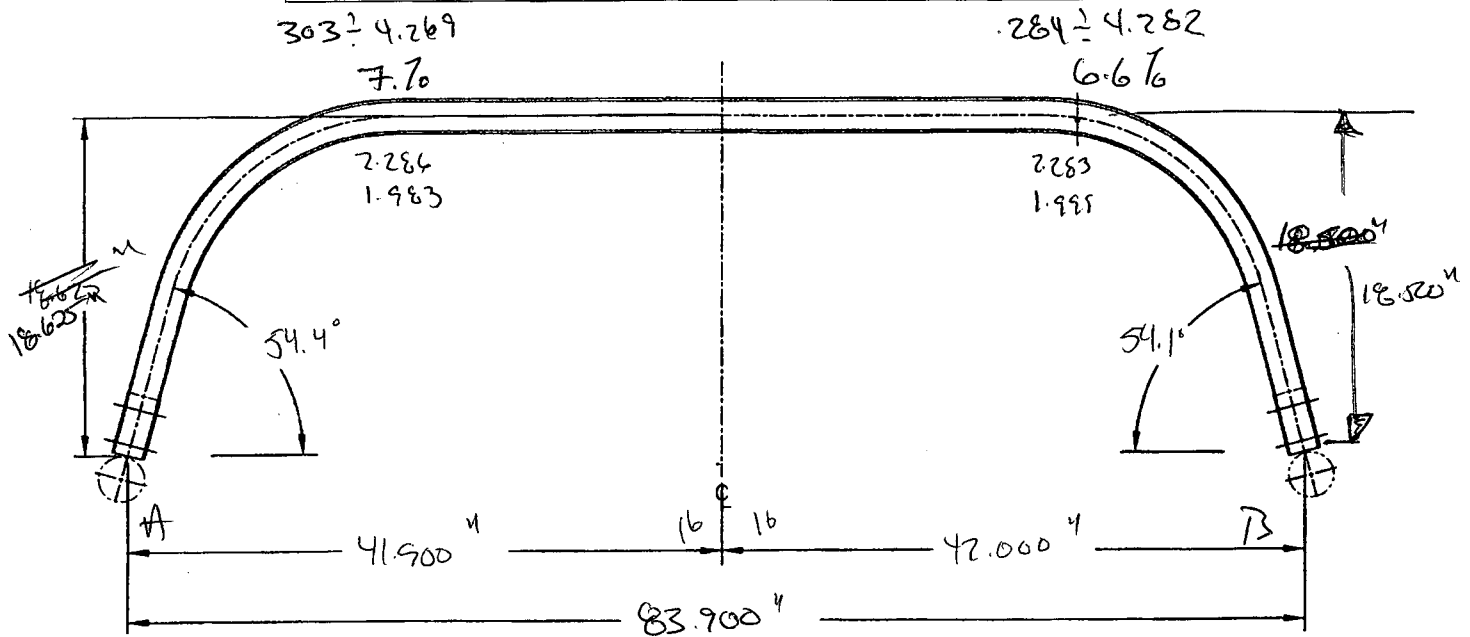
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	84704
Description: Crosstube Mid Aft (206L)		Part Number:	D206-667-207
Inspection Dwg: D206-667-247 Rev: A		Page 1 of 1	

Required Dimension	Min	Max
Height	18.34	18.60
1/2 Span	41.79	42.05
Angle	54°	56°
Total Span	83.59	84.09
Bending Passes	10	N/A
Crushing	N/A	6%



Comments	
Side A =	7.0% crushing @ 16 passes
Side B =	6.6% crushing @ 16 passes

QC15 Inspection	S
Date	12/14/12

Rev	Date	Change	Revised by	Approved
A	12.02.15	New Issue	KJ	UP

Item	Qty -247	Part Number	Description
1	X	D206-667-247	CROSSTUBE ASSEMBLY (206L MID AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 99.76±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-247" AND BATCH NUMBER ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- WEIGHT: 21.1 lbs (-607 = 17.7 lbs)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

84764

DEO ATTACHED

SCW #11-615

11.07.28

UNDER REVIEW

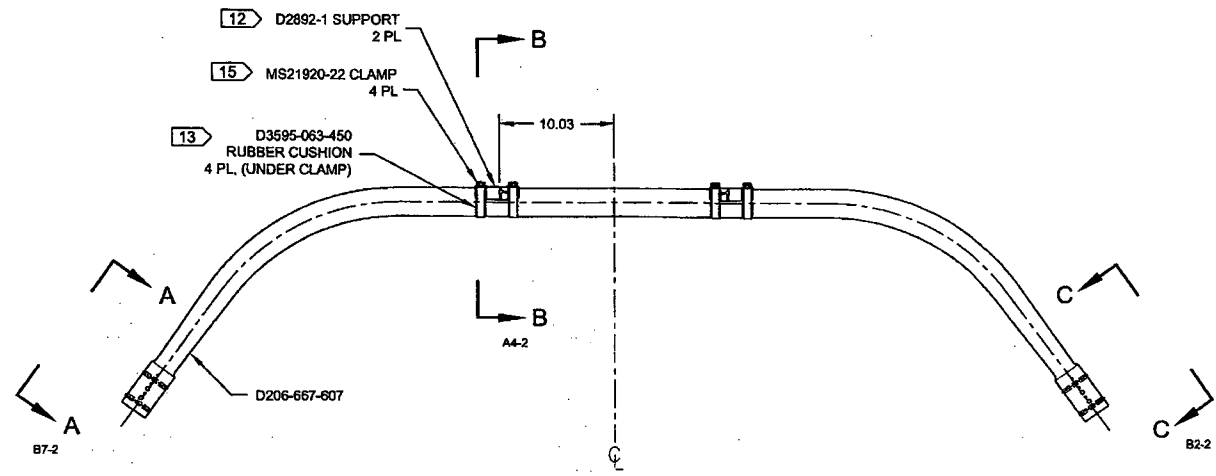
4/11/08/13

RELEASED
2011-05-24

A	NEW ISSUE	CP	10.12.23
REV.	DESCRIPTION	BY	DATE
DESIGN	90		
DRAWN	91		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D206-667-247	REV. A SHEET 1 OF 4
TITLE CROSSTUBE ASS'Y (206L MID AFT)	SCALE NTS
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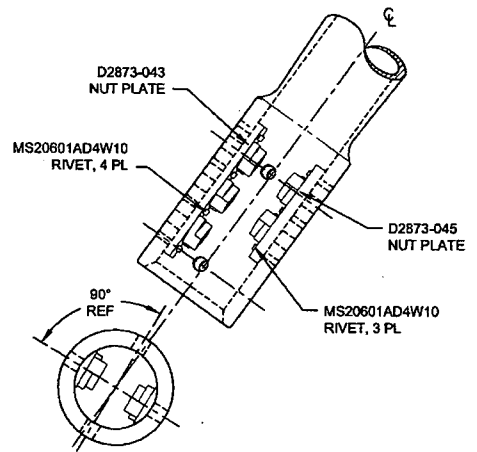
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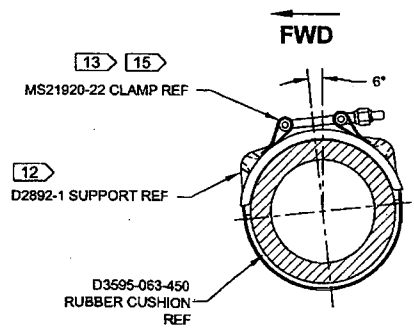
600411-615
11.07.28
UNDER REVIEW
06.13

RELEASED
2011-05-24
EO ATTACHED

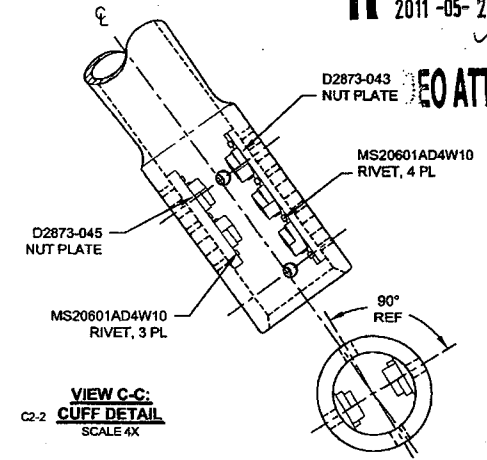
D206-667-247
ASSEMBLY DETAIL
(VIEW LOOKING FWD)



VIEW A-A:
CUFF DETAIL
C7-2
SCALE 4X



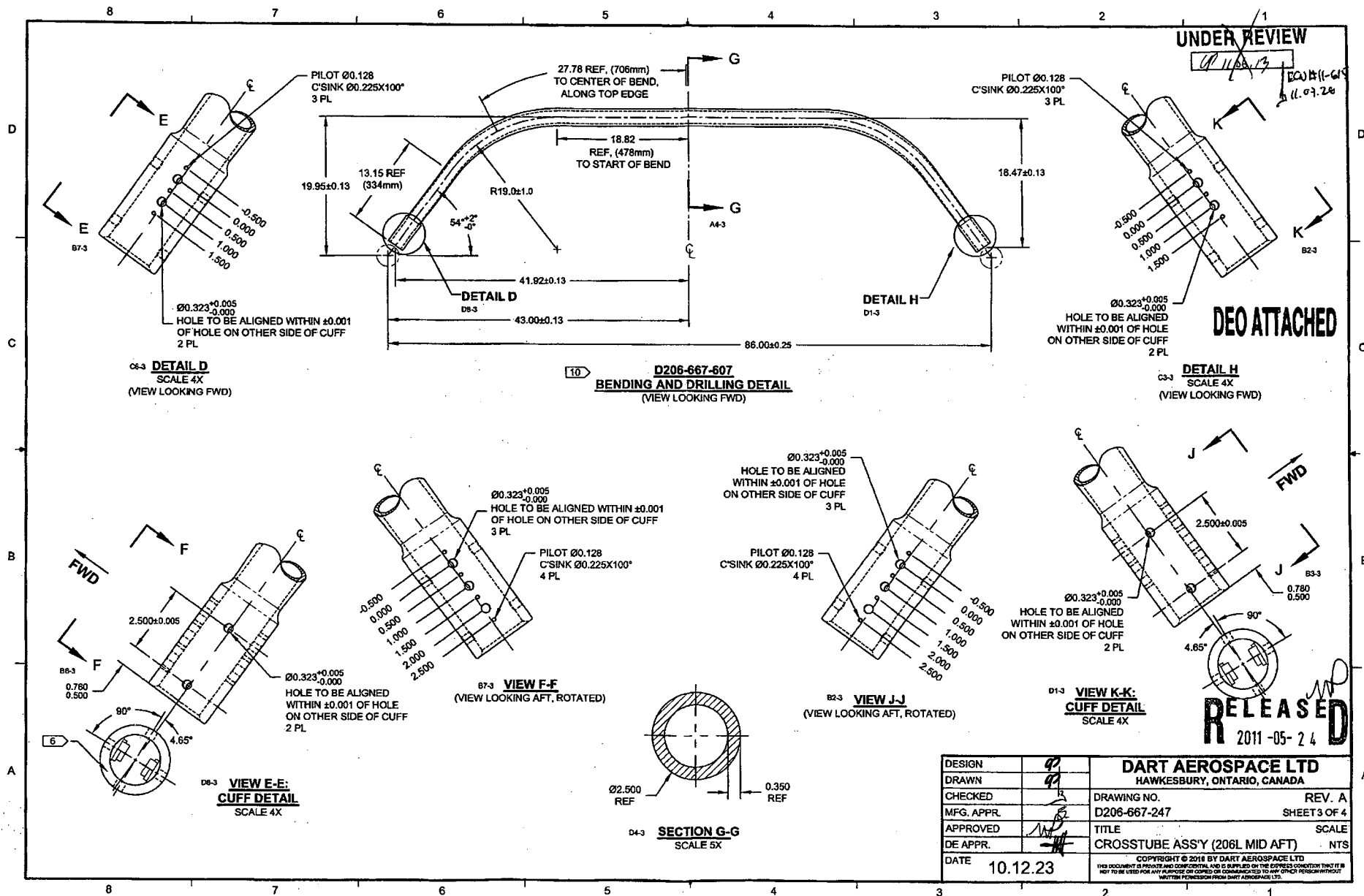
SECTION B-B
D5-2
SCALE 5X



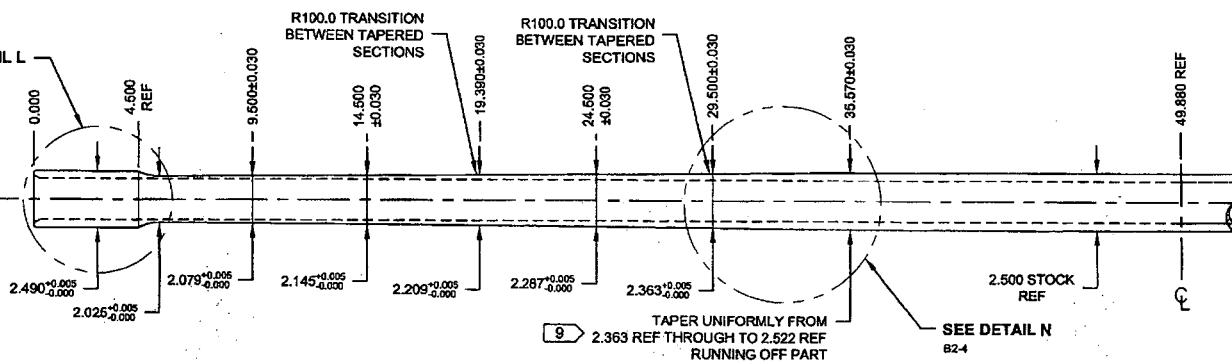
VIEW C-C:
CUFF DETAIL
C2-2
SCALE 4X

DESIGN	97	DART AEROSPACE LTD	
DRAWN	97	HAWKESBURY, ONTARIO, CANADA	
CHECKED	5	DRAWING NO.	REV. A
MFG. APPR.	5	D206-667-247	SHEET 2 OF 4
APPROVED	MF	TITLE	SCALE
DE APPR.	F	CROSSTUBE ASS'Y (206L MID AFT)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR FOR DISSEMINATION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

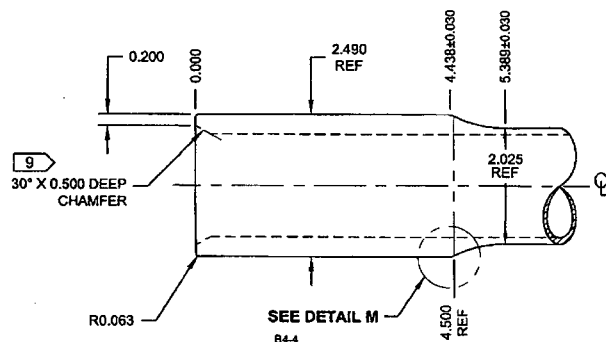
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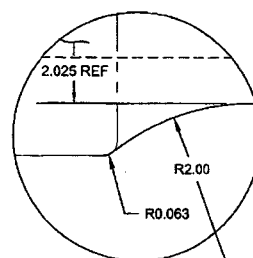
SEE DETAIL L
B7-4



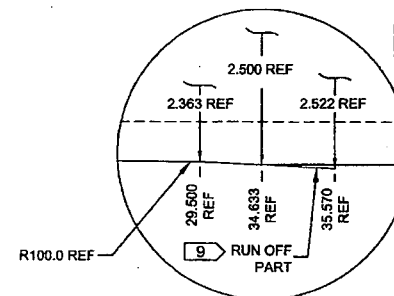
TURNING DETAIL



C7-4 DETAIL L: CROSSTUBE CUFF
SCALE 2.5X



B6-4 DETAIL M: CUFF TRANSITION
NOT TO SCALE



C4-4 DETAIL N: TAPER RUN-OFF
NOT TO SCALE

60746-615
 11.07.28
 UNDER REVIEW
 11.06.13

DEO ATTACHED

RELEASED
 2011-05-24

DESIGN	9	DART AEROSPACE LTD	
DRAWN	9	HAWKESBURY, ONTARIO, CANADA	
CHECKED	9	DRAWING NO.	REV. A
MFG. APPR.	9	D206-667-247	SHEET 4 OF 4
APPROVED	9	TITLE	SCALE
DE APPR.	9	CROSSTUBE ASS'Y (206L MID AFT)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

DRAWING NO. D206-667-247	TITLE CROSSTUBE ASS'Y (206L MID AFT)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-247-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>Q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>KD</i>	APPROVED <i>JWD</i>		DE APPR. <i>#</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.7.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL

CHANGE:

IS:

Item	Qty -247	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2892-1 SUPPORT: ABRAD MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

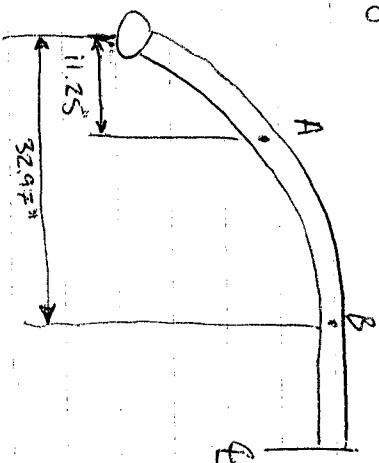
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
JWD

CRUSHING OF D206-667-247

12.01.13

Acceptability of ^{7.3}8% CRUSHING AT END OF BEND



Point A: $\Delta 1 = 2.283$ $\Delta D 2 = 1.973$

$$\text{CRUSHING} = (2.283 - 1.973) / (2.283 + 1.973) = 7.3\%$$

$$I = 0.435 \text{ in}^4 \text{ FROM AUTOCAD}$$

Point B: $\Delta D = 2.50 \text{ in}$ $\Delta D = 1.40 \text{ in}$

$$I = 1.402 \text{ in}^4$$

$$A_0 F = M C / I = P \times 11.25 \times 1.973 / 2 \times 0.435 = 13,52 P$$

$$B_0 \quad \quad \quad = P \times 32.97 \times 2.50 / 2 \times 1.402 = 29,39 P$$

$$M.S. = 29.39 / 13.52 - 1 = 1.17$$

^{7.3} Tube will break at support before area of 8% crushing. 7.3% crushing in area at end of bend is acceptable.

12.01.13

5.2 MID-HEIGHT CROSSTUBES

Item	Qty -107	Qty -207	Part Number	Description
	X		D206-667-107	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID FWD
		X	D206-667-207	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID AFT
7	1		D206-667-147	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID FWD
8		1	D206-667-247	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID AFT
10	*2		D2891-1	SUPPORT
11		*2	D2892-1	SUPPORT
13	*4		D3595-063-395	RUBBER CUSHION
14		*4	D3595-063-450	RUBBER CUSHION
16	*4		MS21920-20	CLAMP
17		*4	MS21920-22	CLAMP
19	4		AN5-32A	BOLT
20		4	AN5-34A	BOLT
21	4	4	MS21042L5	NUT (OR MS21042-5)
22	8	8	ANAS1149C0563J	WASHER (OR AN950JD516)
40	*2	*2	D2873-043	NUT PLATE
41	*2	*2	D2873-045	NUT PLATE
44	10		AN5-7A	BOLT
45		10	AN5-10A	BOLT
46	4		AN5-30A	BOLT
47		4	AN5-32A	BOLT
48	12		AN970-4	WASHER (OPTIONAL)
50	10	10	ANAS1149C0563J	WASHER (OR AN960JD516)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-147/-247 ASSEMBLIES ABOVE

